

Research Article

# Knowledge and Practices of Pediatric Nurses Regarding Evidence-Based Care of Peripheral Intravenous Catheter in Hospitalized Children

Lareen Magdi El-Sayed\*<sup>1</sup>, Wafaa El-Sayed Ouda<sup>2</sup>, Osama Ali Zekry<sup>3</sup>, Manal Farouk Mohammed<sup>4</sup>

<sup>1</sup>Assistant Lecturer of Pediatric Nursing, Faculty of Nursing, Suez Canal University, Egypt

<sup>2</sup>Professor of Pediatric Nursing, Faculty of Nursing, Ain Shams University, Egypt

<sup>3</sup>Professor of Pediatrics, Faculty of Medicine, Suez Canal University, Egypt

<sup>4</sup>Assistant Professor of Pediatric Nursing, Faculty of Nursing, Suez Canal University, Egypt

## Article History

Received: 23.04.2020

Accepted: 26.05.2020

Published: 28.05.2020

## Journal homepage:

<https://www.easpublisher.com/easjnm>

## Quick Response Code



## Corresponding Author

Lareen Magdi El-Sayed

**Abstract: Background:** Evidence based practice involves the utilization of proved findings from researches with clinical experience and patient preferences. Peripheral intravenous catheters are used in up to 60% of the pediatric patients. **Research design and aim:** this study was a descriptive study aimed to assess the knowledge and practices of pediatric nurses regarding evidence-based care of peripheral intravenous catheter in hospitalized children. **Setting:** the study was conducted at the pediatric medical inpatient department, Suez Canal University and Ismailia General Hospitals. **The sample:** included a convenient sample of all nurses (32) working in the above-mentioned settings. Data were gathered using an assessment sheet and observational checklists for the PIVC care. **Results:** revealed that (31.3%) of the studied nurses had satisfactory total score of knowledge, while (37.5%) of the studied nurses had satisfactory total score of practices regarding evidence-based care of peripheral intravenous catheter in hospitalized children. **Conclusion:** the study concluded that almost less than one third of the studied nurses had satisfactory total score of knowledge and more than one third of them had satisfactory total score of practices regarding evidence-based care of peripheral intravenous catheter in hospitalized children. **Recommendation:** raising the awareness of nurses regarding evidence-based care of peripheral intravenous catheter in hospitalized children.

**Keywords:** Evidence based practices, Pediatric nursing - Peripheral intravenous catheter.

**Copyright @ 2020:** This is an open-access article distributed under the terms of the Creative Commons Attribution license which permits unrestricted use, distribution, and reproduction in any medium for non commercial use (NonCommercial, or CC-BY-NC) provided the original author and source are credited.

## INTRODUCTION

Peripheral intravenous catheters are showed to be a necessary evil and are used in 60% of all admitted pediatric patients. The multiple indications and uses of the PIVC made the choice of it crucial in providing the care for the pediatric patients (Salma *et al.*, 2019).

Evidence based practice is denoted as “golden block” in providing the nursing care for pediatric patients. Evidence based practice involves the utilization of well-proved findings from researches and systematic reviews with clinical experience and patient-oriented preferences. Better therapeutic outcomes were noticed when nurses deliver care based on reliable evidence (Higgins *et al.*, 2019).

Nurses' role in handling the PIVCs is undeniable. Therefore, the pediatric nurses' knowledge about evidence based guidelines is crucial to improve the nurses' awareness regarding the recommendations' adherence to achieve better outcomes (Simonetti *et al.*, 2019).

The well identified PIVC's nursing care bundles involve; skillful PIVC's insertion, site inspection, maintenance of vein patency, scrubbing of the PIVC's hub and documentation (Kleidon *et al.*, 2019).

## SUBJECT AND METHODS

A descriptive design was used in this study to assess the knowledge and practices of pediatric nurses regarding evidence-based care of peripheral intravenous catheter in hospitalized children.

### Research Setting:

The study was conducted at the pediatric medical inpatient department in Suez Canal University and Ismailia General Hospitals.

### Target Population:

A convenient sample of pediatric nurses (32) working in the above-mentioned settings regardless their characteristics, data was collected over a period of six months.

**Tools of Data Collection:**

- (1) Assessment sheet that was designed by the researcher and answered by each nurse individually.
- (2) Observational checklists for PIVC care derived from the appropriate evidence to assess nurses' practices in; PIVC's site selection, PIVC's size selection, skin preparation for peripheral intravenous catheter insertion, peripheral intravenous catheter insertion, intravenous fluid therapy, peripheral intravenous medication administration, peripheral intravenous catheter flushing and peripheral intravenous catheter removal.

**Administrative Design:**

An official permission was obtained through written letter that was issued from the dean of the Faculty of nursing, Suez Canal University to the director of each study setting to seek their approval to carry out the study. The aim of the study & its' expected outcomes were illustrated.

**Preparatory Phase:**

A review of the past and current related literature regarding the different aspects of the research problem was carried out using books, periodicals, articles and websites to be acquainted with the research problem and develop the study tools.

**A Pilot Study:**

It was carried out involving 10% of the study sample. It was conducted over a period of one month starting from 15/3/2018 to 15/4/2018 to test the clarity and applicability of the study tools. After obtaining the

results of the pilot study, ambiguous items were omitted, other items were added and others were modified and the final form was developed.

**Ethical Consideration:**

Verbal consent was taken from each nurse and a child's mother prior to participation in the study after simple explanation of the aim and the expected outcomes of the study. The voluntary participation was assured.

**Field Work:**

The actual field work was carried out over a period of six months, starting from 15/5/2018 to 15/11/2018. The average time needed to fill the assessment sheet was about 15 minutes to assess their knowledge regarding evidence-based care of peripheral intravenous catheter in hospitalized children. The nurses' practices regarding the PIVC's care were assessed using the observational checklists. The average time required for the completion of each checklist was 5 minutes.

**Statistical Design:**

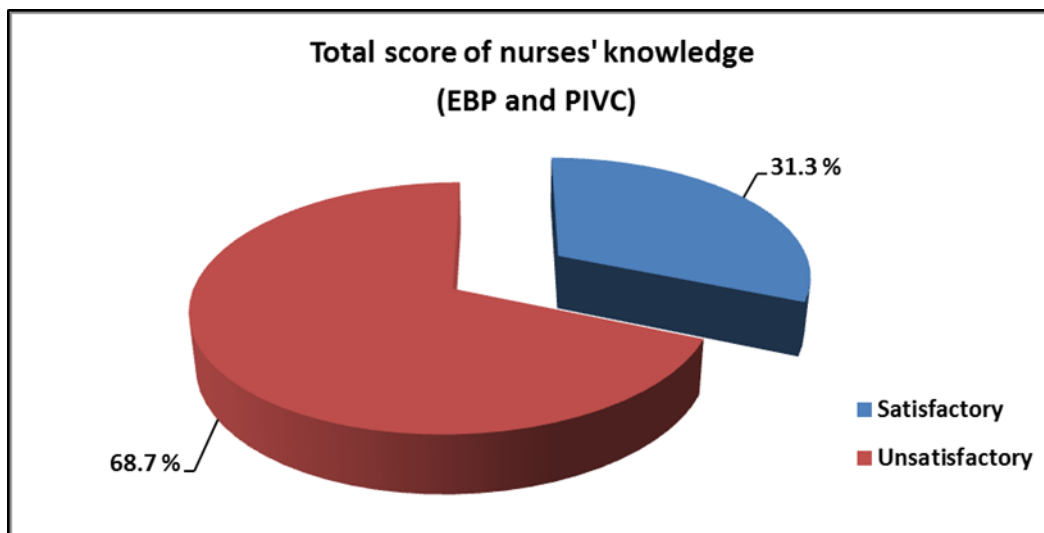
Upon the completion of data collection, the gathered data was organized and coded prior to computer entry. The data were imported into statistical package for social sciences (SPSS version 20) for statistical analysis. Output drafts were checked. Eventually, interpretation was conducted. Various statistical measures were used as; descriptive statistics as, frequency, distribution, means and standard deviations to describe variables of the study.

**RESULTS**

**Table (1):** Distribution of the studied nurses according to their socio-demographic characteristics (n=32).

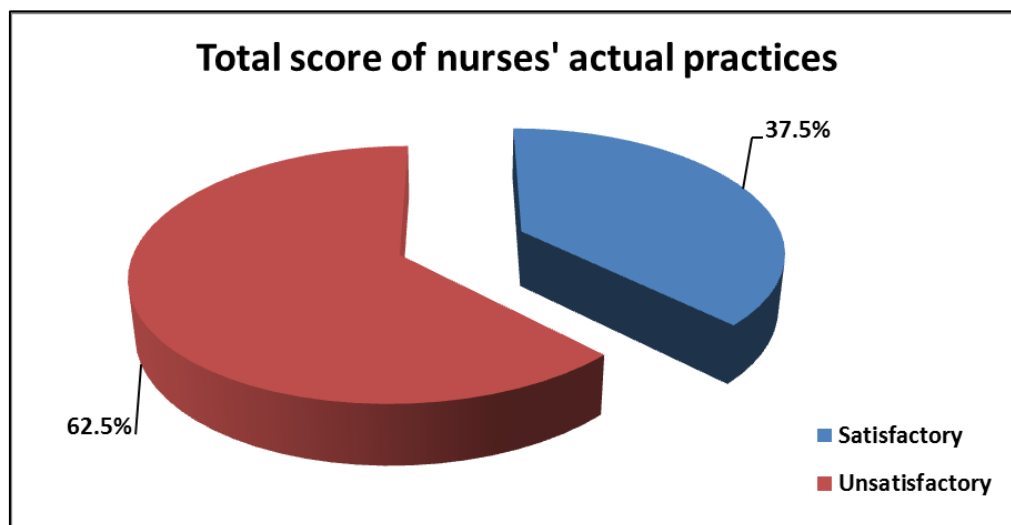
<b>Socio-demographic characteristics</b>	<b>No.</b>	<b>%</b>
<b>Age in years:</b>		
Less than 20	7	21.9
20<30	<b>18</b>	<b>56.2</b>
30≤40	7	21.9
<b>Mean ±SD</b>	26.4±2.3	
<b>Level of Education:</b>		
Diploma	10	31.3
Diploma with specialty	7	21.9
Technical institute	<b>11</b>	<b>34.4</b>
Bachelor of nursing sciences	4	12.5
<b>Years of experience:</b>		
Less than 6	<b>21</b>	<b>65.7</b>
6<12	8	25
12≤18	3	9.3
<b>Attendance of training courses concerning invasive procedures:</b>		
<b>Yes</b>	9	28.1
<b>No</b>	23	71.9

Table (1) showed that more than half of the studied nurses (56.2%) their age ranged between 20 to less than 30 years. More than one third (34.4%) of them were technical institute graduates. Nearly less than two thirds (65.7%) of them had less than 6 years of experience and almost less than three fourths of the studied nurses (71.9%) didn't attend any training courses regarding invasive procedure.



**Figure (1):** Percentage distribution of the studied nurses according to their total score of knowledge (EBP and PIVC) (n=32).

**Figure (1)** clarifies that, almost less than one third (31.3%) of the studied nurses had satisfactory total score of knowledge regarding the EBP and the PIVCs, while more than two thirds (68.7%) of them had unsatisfactory total score of knowledge regarding the EBP and the PIVCs.



**Figure (2):** Percentage of the studied nurses according to their total score of actual practices (n=32).

**Figure (2)** showed that, almost more than one third (37.5%) of the studied nurses had satisfactory total score of practices, while less than two thirds (62.5%) of them had unsatisfactory total score of practices.

## DISCUSSION

Peripheral intravenous catheters are the routinely used invasive devices in pediatric health care setting. Up to 60% of pediatric patients who need preparatory emergent care have a catheter routinely. The care of peripheral intravenous catheters can be delivered in a safe and cost effective ways outside of the hospital (Wooten and Gallagher, 2016). Nurses involved in the care of PIVCs must be competent in its

assessment and care. The evidence recommended that continuous on-job education should be provided to the parents and other care givers (Fakih *et al.*, 2012).

The results of the present study illustrated that, the mean age of the studied nurses was 26.4 years and more than half of them their age ranged between 20 to less than 30 years (Table, 1). Also Mishelmovich *et al.*, (2016) in their study entitled as "Breaking significant news: the experience of clinical nurse specialists in

cancer and palliative care", found that the pediatric nurses after years of clinical experience become more confident in delivering therapeutic care and communicating with patients.

Concerning the years of experience, nearly less than two thirds of the studied nurses had less than 6 years of experience (Table, 1). This result may be due to some traditional administrative decisions that decrease the work assignments of the more experienced nurses thus decreasing their contact with pediatric patients. On the same line, in another study describing "Lifespan and associated factors of peripheral intravenous cannula among infants admitted in public hospitals of Mekelle City, Tigray, Ethiopia, 2016" that was held by Birhane *et al.*, (2017) nearly more than half of the studied nurses had less than 2 years of experience.

The current study clarified that, almost less than three fourths of the studied nurses didn't attend any training courses regarding invasive procedures (Table, 1). This finding was in an agreement with a study entitled "Evaluating factors associated with implementing evidence-based practice in nursing", carried out by Farokhzadian *et al.*, (2015) who found that most (87.4%) of the nurses didn't attend any training about the subject. This may be due to the increased work activities of nurses. This result was contradicted with a study examining the "Effectiveness of structured teaching program on knowledge and practices of staff nurses on prevention of intravenous cannulae complications", by George and Muninarayanappa, (2013), where almost less than one third of the nurses weren't exposed to any training dealing with the prevention of complications of intravenous cannula.

In the present study, almost less than one third of the studied nurses had satisfactory total score of knowledge regarding the EBP and the PIVCs (Figure, 1). This result may be due to that the only source of information was their daily work with the patients. The finding of the present study wasn't supported by Se and Wm, (2016) in their study of "Nurses' knowledge and practice in relation to peripheral intravenous catheter care" where they found that, nurses' were knowledgeable and skillful in relation to the care of peripheral intravenous catheters in the hospitalized children.

This study showed that, almost more than one third of the studied nurses had satisfactory total score of practices (Figure, 2). This finding was contradicted by a study examining the "Effectiveness of structured teaching program on knowledge and practices of staff nurses on prevention of intravenous cannulae complications" that was carried out by George and Muninarayanappa, (2013) who found that, the practice

scores of staff nurses regarding cannulae care were relatively high.

## CONCLUSION

In the light of the current study, it can be concluded that, almost less than one third of the studied nurses had satisfactory total score of knowledge regarding the EBP and the PIVCs. While more than one third of them had satisfactory total score of practices.

## Recommendations

In the light of the current study, the following recommendations are suggested:

- (1) Raising the awareness of nurses regarding the concept of EBP and its application in the care of PIVC through pamphlets, simple instructions or posters.
- (2) Applying training programs for the nurses regarding evidence based practices and its' application in the pediatric patients health care settings.

## REFERENCES

1. Birhane, E., Kidanu, K., Kassa, M., Gerezgiher, D., Tsegay, L., Weldu, B., Kidane, G. & Gerense, H. 2017. Lifespan and associated factors of peripheral intravenous cannula among infants admitted in public hospitals of Mekelle City, Tigray, Ethiopia, 2016. *Bmc Nursing*, 16, 33.
2. Fakih, M. G., Jones, K., Rey, J. E., Berriel-Cass, D., Kalinicheva, T., Szpunar, S. & Saravolatz, L. D. 2012. Sustained improvements in peripheral venous catheter care in non-intensive care units: a quasi-experimental controlled study of education and feedback. *Infection Control & Hospital Epidemiology*, 33, 449-455.
3. Farokhzadian, J., Khajouei, R. & Ahmadian, L. 2015. Evaluating factors associated with implementing evidence-based practice in nursing. *Journal of Evaluation in Clinical Practice*, 21, 1107-1113.
4. Higgins, A., Downes, C., Varley, J., Doherty, C., Begley, C. & Elliott, N. 2019. Evidence-based practice among epilepsy specialist nurses in the Republic of Ireland: findings from the sense study. *Journal of Nursing Management*, 9, 132.
5. George, K. & Muninarayanappa, B. 2013. Effectiveness of structured teaching program on knowledge and practices of staff nurses on prevention of intravenous cannulae complications. *Archives of Medicine and Health Sciences*, 1, 115.
6. Kleidon, T. M., Cattanaach, P., Mihala, G. & Ullman, A. J. 2019. Implementation of a paediatric peripheral intravenous catheter care bundle: A quality improvement initiative. *Journal of Paediatrics and Child Health*, 16, 85-89.
7. Mishelmovich, N., Arber, A. & Odellius, A. 2016. Breaking significant news: the experience of clinical nurse specialists in cancer and palliative

- care. *European Journal of Oncology Nursing*, 21, 153-159.
8. Salma, U., Sarker, M. A. S., Zafrin, N. & Ahamed, K. S. 2019. Frequency of peripheral intravenous catheter related phlebitis and related risk factors: a prospective study. *Journal of Medicine*, 20, 29-33.
  9. Se, H. & Wm, T. 2016. Nurses' knowledge and practice in relation to peripheral intravenous catheter care. *Med & Health*, 11, 181-188.
  10. Simonetti, V., Comparcini, D., Miniscalco, D., Tirabassi, R., Di Giovanni, P. & Cicolini, G. 2019. Assessing nursing students' knowledge of evidence-based guidelines on the management of peripheral venous catheters: A multicentre cross-sectional study. *Nurse Education Today*, 73, 77-82.
  11. Wootten, C. & Gallagher, S. 2016. A day in the life of a peripheral intravenous catheter: the patient journey through the continuum of care. *The Journal of the Association for Vascular Access*, 21, 245-246.